

Amendments to the Claims

1 Claim 1 (original): A plurality of arrays representing a structured document in an array-based  
2 storage format, wherein the arrays reside on one or more computer-readable media and comprise:  
3 an element name array, the element name array comprising an element name entry for each  
4 element in the structured document;  
5 an element value array, the element value array comprising an element value entry for each  
6 element in the structured document;  
7 an attribute array, the attribute array comprising an attribute entry for each element in the  
8 structured document;  
9 a parent array, the parent array comprising a parent entry for each element in the  
10 structured document and wherein a value of each parent entry identifies a parent of the element;  
11 and  
12 a child array, the child array comprising a child entry for each element in the structured  
13 document and wherein a value of each child entry identifies zero or more children of the element.

1 Claim 2 (original): The arrays according to Claim 1, wherein each element name entry specifies a  
2 starting name position and a name length.

1 Claim 3 (original): The arrays according to Claim 2, wherein the starting name position is relative  
2 to a beginning of a storage buffer wherein a name of each of the elements is stored.

1 Claim 4 (original): The arrays according to Claim 1, wherein each element name entry specifies a

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2 starting name position and an ending name position, and wherein the starting and ending name  
3 positions are relative to a beginning of a storage buffer wherein a name of each of the elements is  
4 stored.

1 Claim 5 (original): The arrays according to Claim 1, wherein each element value entry specifies a  
2 starting value position and a value length.

1 Claim 6 (original): The arrays according to Claim 5, wherein the starting value position is relative  
2 to a beginning of a storage buffer wherein a value of each of the elements is stored.

1 Claim 7 (currently amended): The arrays according to Claim [[5]] 1, wherein each element value  
2 entry specifies a starting value position and an ending value position, and wherein the starting and  
3 ending value positions are relative to a beginning of a storage buffer wherein a value of each of  
4 the elements is stored.

1 Claim 8 (original): The arrays according to Claim 1, wherein each attribute entry specifies a  
2 reference to a secondary array, wherein the secondary array comprises a secondary attribute entry  
3 for each of one or more attributes of those ones of the elements which have attributes, and a null  
4 value otherwise.

1 Claim 9 (original): The arrays according to Claim 8, wherein each secondary attribute entry  
2 specifies a starting name position and a length for a name of the attribute, and a starting value

3 position and a length for a value of the attribute.

1 Claim 10 (original): The arrays according to Claim 8, wherein each secondary attribute entry  
2 specifies a starting name position and an ending name position for a name of the attribute, and a  
3 starting value position and an ending value position for a value of the attribute.

1 Claim 11 (original): A plurality of arrays representing a structured document in an array-based  
2 storage format, wherein the arrays reside on one or more computer-readable media and comprise:  
3 an element name array, the element name array comprising an element name entry for each  
4 element in the structured document, wherein each element name entry specifies a starting name  
5 position and one of (1) a name length or (2) an ending name position;  
6 an element value array, the element value array comprising an element value entry for each  
7 element in the structured document, wherein each element value entry specifies a starting value  
8 position and one of (1) a value length or (2) an ending value position;  
9 a parent array, the parent array comprising a parent entry for each element in the  
10 structured document and wherein a value of each parent entry identifies a parent of the element;  
11 and  
12 a child array, the child array comprising a child entry for each element in the structured  
13 document and wherein a value of each child entry identifies zero or more children of the element.

1 Claim 12 (original): A computer program product embodied on one or more computer-readable  
2 media, the computer program product adapted for representing a source document encoded in an

3 extensible structured notation using a plurality of arrays and comprising:

4 computer-readable program code means for generating an element name array, the  
5 element name array comprising an element name entry for each element in the source document,  
6 wherein each element name entry specifies a starting name position and one of (1) a name length  
7 or (2) an ending name position;

8 computer-readable program code means for generating an element value array, the  
9 element value array comprising an element value entry for each element in the source document,  
10 wherein each element value entry specifies a starting value position and one of (1) a value length  
11 or (2) an ending value position;

12 computer-readable program code means for generating a parent array, the parent array  
13 comprising a parent entry for each element in the source document and wherein a value of each  
14 parent entry identifies a parent of the element;

15 computer-readable program code means for generating a child array, the child array  
16 comprising a child entry for each element in the source document and wherein a value of each  
17 child entry identifies zero or more children of the element; and

18 computer-readable program code means for storing the generated arrays in memory or  
19 writing the generated arrays to one or more storage media.

1 Claim 13 (original): The computer program product according to Claim 12, further comprising:

2 computer-readable program code means for generating an attribute array, the attribute  
3 array comprising an attribute entry for each element in the structured document, wherein each  
4 attribute entry specifies a reference to a secondary array and wherein the secondary array

5 comprises a secondary attribute entry for each of one or more attributes of those ones of the  
6 elements which have attributes, and a null value otherwise; and wherein each secondary attribute  
7 entry specifies a starting name position and one or (1) an ending name position or (2) a length for  
8 a name of the attribute, and a starting value position and one or (1) an ending value position or  
9 (2) a length for a value of the attribute.

1 Claim 14 (original): The computer program product according to Claim 12, wherein the  
2 extensible structured notation is XML (Extensible Markup Language).

1 Claim 15 (original): The computer program product according to Claim 12, further comprising  
2 computer-readable program code means for generating an output structured document from the  
3 arrays.

1 Claim 16 (original): A computer program product embodied on one or more computer-readable  
2 media, the computer program product adapted for creating a plurality of arrays to represent a  
3 source document encoded in a machine-oriented extensible structured notation ("mXML") and  
4 comprising:

5 computer-readable program code means for obtaining a node count from the source  
6 document;

7 computer-readable program code means for generating the arrays based on the node  
8 count; and

9 computer-readable program code means for processing a plurality of node specifications

10 from the source document, further comprising:

11 computer-readable program code means for obtaining an element name  
12 specification from the node specification;

13 computer-readable program code means for storing element name information in  
14 an element name array, using the element name specification;

15 computer-readable program code means for obtaining an attribute list specification  
16 from the node specification;

17 computer-readable program code means for storing attribute information in an  
18 attribute array, using the attribute list specification;

19 computer-readable program code means for obtaining a child list specification from  
20 the node specification;

21 computer-readable program code means for storing child information in a child  
22 array, using the child list specification;

23 computer-readable program code means for storing parent information in a parent  
24 array, using the child list specification;

25 computer-readable program code means for obtaining an element value  
26 specification from the node specification; and

27 computer-readable program code means for storing element value information in  
28 an element value array, using the element specification.

1 Claim 17 (original): The computer program product according to Claim 16, further comprising  
2 computer-readable program code means for generating an output mXML document by traversing

3 the plurality of arrays.

1 Claim 18 (currently amended): A computer program product embodied on one or more  
2 computer-readable media, the computer program product adapted for efficiently transforming a  
3 structured document and comprising:

4 computer-readable program code means for creating an array-based representation of the  
5 structured document, further comprising:

6 computer-readable program code means for creating an element name array to  
7 store information pertaining to a name of each of a plurality of elements in the structured  
8 document;

9 computer-readable program code means for creating an element value array to  
10 store information pertaining to a value of each of the elements;

11 computer-readable program code means for creating an attribute array to store  
12 information pertaining to a name and a value of each of zero or more attributes of each of the  
13 elements;

14 computer-readable program code means for creating a parent array to store  
15 information pertaining to a parent of each of the elements; and

16 computer-readable program code means for creating a child array to store  
17 information pertaining to zero or more children of each of the elements;

18 computer-readable program code means for obtaining an identification of a particular  
19 element of the structured document which is to be transformed;

20 computer-readable program code means for locating an entry for the particular element in

21 the arrays-based representation; and  
22 computer-readable program code means for transforming information represented by the  
23 located entry.

1 Claim 19 (original): The computer program product according to Claim 18, wherein the  
2 identification is an element name and wherein the computer-readable program code means for  
3 locating further comprises computer-readable program code means for searching the element  
4 name array to find a match with the identification.

1 Claim 20 (original): The computer program product according to Claim 18, wherein the  
2 identification is an ordinal representing a relative position of the particular element in the  
3 structured document, and wherein the computer-readable program code means for locating  
4 further comprises computer-readable program code means for using the ordinal as an index to  
5 access one or more of the arrays in the array-based representation.

1 Claim 21 (original): A system for representing a source document encoded in an extensible  
2 structured notation using a plurality of arrays, comprising:  
3 means for generating an element name array, the element name array comprising an  
4 element name entry for each element in the source document, wherein each element name entry  
5 specifies a starting name position and one of (1) a name length or (2) an ending name position;  
6 means for generating an element value array, the element value array comprising an  
7 element value entry for each element in the source document, wherein each element value entry



8 specifies a starting value position and one of (1) a value length or (2) an ending value position;

9 means for generating a parent array, the parent array comprising a parent entry for each  
10 element in the source document and wherein a value of each parent entry identifies a parent of the  
11 element;

12 means for generating a child array, the child array comprising a child entry for each  
13 element in the source document and wherein a value of each child entry identifies zero or more  
14 children of the element; and

15 means for storing the generated arrays in memory or writing the generated arrays to one  
16 or more storage media.

1 Claim 22 (original): The system according to Claim 21, further comprising:

2 means for generating an attribute array, the attribute array comprising an attribute entry  
3 for each element in the structured document, wherein each attribute entry specifies a reference to  
4 a secondary array and wherein the secondary array comprises a secondary attribute entry for each  
5 of one or more attributes of those ones of the elements which have attributes, and a null value  
6 otherwise; and wherein each secondary attribute entry specifies a starting name position and one  
7 or (1) an ending name position or (2) a length for a name of the attribute, and a starting value  
8 position and one or (1) an ending value position or (2) a length for a value of the attribute.

1 Claim 23 (original): The system according to Claim 21, wherein the extensible structured  
2 notation is XML (Extensible Markup Language).

1 Claim 24 (original): The system according to Claim 21, further comprising means for generating  
2 an output structured document from the arrays.

1 Claim 25 (original): A system for creating a plurality of arrays to represent a source document  
2 encoded in a machine-oriented extensible structured notation ("mXML"), comprising:

3 means for obtaining a node count from the source document;

4 means for generating the arrays based on the node count; and

5 means for processing a plurality of node specifications from the source document, further  
6 comprising:

7 means for obtaining an element name specification from the node specification;

8 means for storing element name information in an element name array, using the  
9 element name specification;

10 means for obtaining an attribute list specification from the node specification;

11 means for storing attribute information in an attribute array, using the attribute list  
12 specification;

13 means for obtaining a child list specification from the node specification;

14 means for storing child information in a child array, using the child list  
15 specification;

16 means for storing parent information in a parent array, using the child list  
17 specification;

18 means for obtaining an element value specification from the node specification; and

19 means for storing element value information in an element value array, using the

20 element specification.

1 Claim 26 (original): The system according to Claim 25, further comprising means for generating  
2 an output mXML document by traversing the plurality of arrays.

1 Claim 27 (currently amended): A system for efficiently transforming a structured document,  
2 comprising:

3 means for creating an array-based representation of the structured document, further  
4 comprising:

5 means for creating an element name array to store information pertaining to a  
6 name of each of a plurality of elements in the structured document;

7 means for creating an element value array to store information pertaining to a  
8 value of each of the elements;

9 means for creating an attribute array to store information pertaining to a name and  
10 a value of each of zero or more attributes of each of the elements;

11 means for creating a parent array to store information pertaining to a parent of  
12 each of the elements; and

13 means for creating a child array to store information pertaining to zero or more  
14 children of each of the elements;

15 means for obtaining an identification of a particular element of the structured document  
16 which is to be transformed;

17 means for locating an entry for the particular element in the arrays-based representation;

18 and

19 means for transforming information represented by the located entry.

1 Claim 28 (original): The system according to Claim 27, wherein the identification is an element  
2 name and wherein the means for locating further comprises means for searching the element name  
3 array to find a match with the identification.

1 Claim 29 (original): The system according to Claim 27, wherein the identification is an ordinal  
2 representing a relative position of the particular element in the structured document, and wherein  
3 the means for locating further comprises means for using the ordinal as an index to access one or  
4 more of the arrays in the array-based representation.

1 Claim 30 (original): A method for representing a source document encoded in an extensible  
2 structured notation using a plurality of arrays, comprising the steps of:

3 generating an element name array, the element name array comprising an element name  
4 entry for each element in the source document, wherein each element name entry specifies a  
5 starting name position and one of (1) a name length or (2) an ending name position;

6 generating an element value array, the element value array comprising an element value  
7 entry for each element in the source document, wherein each element value entry specifies a  
8 starting value position and one of (1) a value length or (2) an ending value position;

9 generating a parent array, the parent array comprising a parent entry for each element in  
10 the source document and wherein a value of each parent entry identifies a parent of the element;

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11 generating a child array, the child array comprising a child entry for each element in the  
12 source document and wherein a value of each child entry identifies zero or more children of the  
13 element; and  
14 storing the generated arrays in memory or writing the generated arrays to one or more  
15 storage media.

1 Claim 31 (currently amended): The method according to Claim [[21]] 30, further comprising the  
2 steps of:

3 generating an attribute array, the attribute array comprising an attribute entry for each  
4 element in the structured document, wherein each attribute entry specifies a reference to a  
5 secondary array and wherein the secondary array comprises a secondary attribute entry for each  
6 of one or more attributes of those ones of the elements which have attributes, and a null value  
7 otherwise; and wherein each secondary attribute entry specifies a starting name position and one  
8 or (1) an ending name position or (2) a length for a name of the attribute, and a starting value  
9 position and one or (1) an ending value position or (2) a length for a value of the attribute.

1 Claim 32 (original): The method according to Claim 30, wherein the extensible structured  
2 notation is XML (Extensible Markup Language).

1 Claim 33 (original): The method according to Claim 30, further comprising the step of generating  
2 an output structured document from the arrays.

1 Claim 34 (original): A method for creating a plurality of arrays to represent a source document  
2 encoded in a machine-oriented extensible structured notation ("mXML"), comprising the steps of:  
3 obtaining a node count from the source document;  
4 generating the arrays based on the node count; and  
5 processing a plurality of node specifications from the source document, further comprising  
6 the steps of:

7 obtaining an element name specification from the node specification;  
8 storing element name information in an element name array, using the element  
9 name specification;  
10 obtaining an attribute list specification from the node specification;  
11 storing attribute information in an attribute array, using the attribute list  
12 specification;  
13 obtaining a child list specification from the node specification;  
14 storing child information in a child array, using the child list specification;  
15 storing parent information in a parent array, using the child list specification;  
16 obtaining an element value specification from the node specification; and  
17 storing element value information in an element value array, using the element  
18 specification.

1 Claim 35 (original): The method according to Claim 34, further comprising the step of generating  
2 an output mXML document by traversing the plurality of arrays.

1 Claim 36 (currently amended): A method for efficiently transforming a structured document,  
2 comprising the steps of:

3 creating an array-based representation of the structured document, further comprising the  
4 steps of:

5 creating an element name array to store information pertaining to a name of each  
6 of a plurality of elements in the structured document;

7 creating an element value array to store information pertaining to a value of each  
8 of the elements;

9 creating an attribute array to store information pertaining to a name and a value of  
10 each of zero or more attributes of each of the elements;

11 creating a parent array to store information pertaining to a parent of each of the  
12 elements; and

13 creating a child array to store information pertaining to zero or more children of  
14 each of the elements;

15 obtaining an identification of a particular element of the structured document which is to  
16 be transformed;

17 locating an entry for the particular element in the arrays-based representation; and

18 transforming information represented by the located entry.

1 Claim 37 (original): The method according to Claim 36, wherein the identification is an element  
2 name and wherein the locating step further comprises the step of searching the element name  
3 array to find a match with the identification.

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1     **Claim 38 (original): The method according to Claim 36, wherein the identification is an ordinal**  
2     **representing a relative position of the particular element in the structured document, and wherein**  
3     **the locating step further comprises the step of using the ordinal as an index to access one or more**  
4     **of the arrays in the array-based representation.**